



## LX66, LX66A & LS+58 Serial Communications

**NOTE:** There is no connect/disconnect command. The built-in keypad, IR remote and RS-232 control will function simultaneously.

<b>This Section Includes:</b>	1.1 Overview.....	page 1
	1.2 Connection.....	page 1
	1.3 Messages: .....	page 3
	Control Commands.....	page 3
	Status Commands.....	page 10
	Error Codes .....	page 23
	1.4 Controlling Multiple Projectors .....	page 23

**1.1 Overview** LX66/66A & LS+58 serial communications allow the control of projectors by an external controller, such as an AMX or Creston controller. Once connected to the RS-232 port of the projector, controllers can access projector controls and setups, issue commands and receive replies.

**1.2 Connection** To use LX66/66A and LS+58 serial communications you must first connect the projector to a PC or controller. Using an RS232 Null Modem cable, connect the projector to the computer. Refer to Table 1 for Port Characteristics. Refer to Table 2 for projector wiring hook-up.

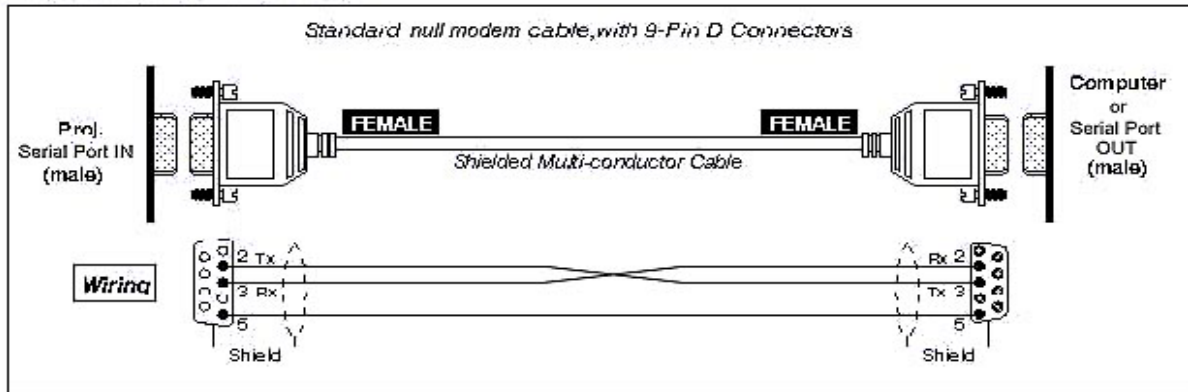
LX66 & LS+58	Protocol: RS232C Baud Rate: 19200 bps Data Bits: 8 bits Stop Bit: 1 bit Parity : None Flow Cntrl: None
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**Table 1: Port Characteristics**

**NOTE:** 1) To avoid damage, connect only properly wired RS-232 serial communication cables to the projector Serial Port. 2) Communication cables longer than 50 feet should be of high quality and low capacitance, well shielded and grounded.

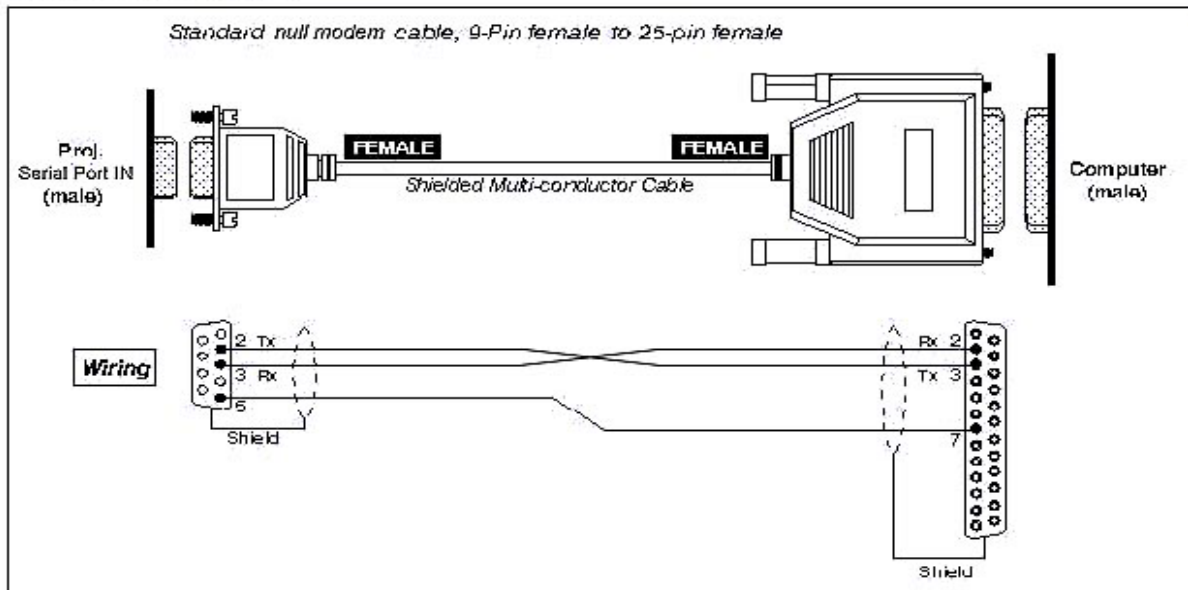
#### ❑ From projector to computer / projector

*For computers having a 9-pin "AT" type serial port*



#### ❑ From projector to computer

*For computers having a 25-pin serial port*



**Table 2: Projector Wiring Hook-Up**

## 1.3 Messages

The LX66/66A and LS+58 have two types of commands: Control Command and Status Request Commands. Each command must be succeeded with a "CR" code, which is the equivalent to a carriage return. In hexadecimal the "CR" code is 0D.

*Note: All communications (commands and replies) are hexadecimal. Ensure you are sending hexadecimal. Commands are case sensitive. Make sure to always send letters in upper case.*

**The following delays are recommended:**

**7 sec delay for power "ON" (do not send commands during this time)**

**5 sec delay for switching Inputs (do not send commands during this time)**

**Projector will not respond to "execution commands" during power on, switching modes, cooling down, error codes, power management and in standby mode. Status requests will be available during these times.**

10ms delay between characters.

100ms delay for pipelining commands. Ex. Volume +/-, zoom up/down etc

500ms delay between commands for the following: Check Table 3

**NOTE: If you send an Execution command before receiving a response from the previous Execution command, you could lock up the projector requiring a hard power down to regain control of the projector.**

## **Control Commands**

Control commands are used to set or modify various projector characteristics or to emulate key presses from the built in keypad/IR remote control.

*Note: Unless Display is set to OFF in the Setting Menu, most commands will cause an OSD to appear.*

Control commands follow the protocol:

**Cxx(CR)**

Where **xx** is the command code (see Table 3 for a complete list of command codes) and (CR) is 0D.

*Note: Commands are listed in ASCII, but all communications (commands and replies) are hexadecimal. Ensure you are sending hexadecimal. Commands are case sensitive. Make sure to always send letters in upper case.*

**Example: As listed, Power On = C 0 0 (CR)**

You should send: **43h 30h 30h 0Dh**

When a control command is sent to the projector, a response is sent back to the controller to notify it about how the command was treated.

There are two possible responses to a control command:

**06 (CR)** -- Command accepted and executed

**? (CR)** -- Command not recognized

**Table 3: Command Codes**

Command Code	Function	Notes
00	POWER ON	7000ms between commands

01	(quick) POWER OFF	3000ms between commands
03	INPUT 5	5000ms between commands
05	INPUT 1	5000ms between commands
06	INPUT 2	5000ms between commands
07	INPUT 3	5000ms between commands
08	INPUT 4	5000ms between commands
09	VOLUME +	Increments the Volume setting by one.
0A	VOLUME -	Decrements the Volume setting by one.
0B	AUDIO MUTE ON	
0C	AUDIO MUTE OFF	
0D	VIDEO MUTE ON	Video Mute ON
0E	VIDEO MUTE OFF	Video Mute OFF
0F	NORMAL SIZE	Sets screen size to Normal
10	FULL SIZE	Sets screen size to Full Size
1C	MENU ON	Brings main menu up on screen
1D	MENU OFF	Clears main menu from screen
1E	CLEAR SCREEN	Clears OSD regardless of location in software.
27	IMAGE KEY	
3A	RIGHT POINTER	
3B	LEFT POINTER	
3C	UP POINTER	
3D	DOWN POINTER	
3F	ENTER KEY	
43	FREEZE ON	
44	FREEZE OFF	
46	ZOOM LENS DOWN KEY	Each issue of the command performs a slight adjustment. Many issuings of the command are required for a visible change.
47	ZOOM LENS UP KEY	Each issue of the command performs a slight adjustment. Many issuings of the command are required for a visible change.
4A	FOCUS DOWN KEY	Each issue of the command performs a slight adjustment. Many issuings of the command are required for a visible change.
4B	FOCUS UP KEY	Each issue of the command performs a slight adjustment. Many issuings of the command are required for a visible change.
5D	LENS SHIFT UP	Each issue of the command performs a slight adjustment. Many issuings of the command are required for a visible change.
5E	LENS SHIFT DOWN	Each issue of the command performs a slight adjustment. Many issuings of the command are required for a visible change.

5F	LENS SHIFT LEFT	Each issue of the command performs a slight adjustment. Many issuings of the command are required for a visible change.
60	LENS SHIFT RIGHT	Each issue of the command performs a slight adjustment. Many issuings of the command are required for a visible change.
70	FULL LAMP MODE	2 Lamp Mode 90 second time out period required before issuing another lamp mode change command
71	HALF LAMP MODE 1	Lamp Mode – Lamp 1 is on 90 second time out period required before issuing another lamp mode change command
72	HALF LAMP MODE 2	1 Lamp Mode – Lamp 2 is on 90 second time out period required before issuing another lamp mode change command
89	Auto PC adjust	

### **Extended Control Commands**

Control commands are used to set or modify various projector characteristics or to emulate key presses from the built in keypad/IR remote control.

*Note: Unless Display is set to OFF in the Setting Menu, most commands will cause an OSD to appear.*

Control commands follow the protocol:

**CF\_XX\_## (CR)**

Where \_ is a space, **XX** is the command code and **##** is the parameter (see Table 3a for a complete list of extended control codes) and (CR) is 0D.

When a control command is sent to the projector, a response is sent back to the controller to notify it about how the command was treated.

There are two possible responses to a control command:

**06 (CR)** -- Command accepted and executed  
**? (CR)** -- Command not recognized

**Table 3a: Image Command Table**

Command Code	Function	Timing Msec	Parameters
BRIGHT	Set Brightness value	500	000 – 063, UP / DN
CONT	Set Contrast value	500	000 – 063, UP / DN
COLOR	Set Color value	500	000 – 063, UP / DN

TINT	Set Tint value	500	000 – 063, UP / DN
SHARP	Set Sharpness value	500	000 – 015, UP / DN
GAMMA	Set Gamma value	500	000 – 015, UP / DN
WBAL-R	Set White Balance Red value	500	000 – 063, UP / DN
WBAL-G	Set White Balance Green value	500	000 – 063, UP / DN
WBAL-B	Set White Balance Blue value	500	000 – 063, UP / DN
COLTEMP	Set Color Temp. value	500	000 – 003, UP / DN 000 – Xlow 001 – Low 002 – Mid 003 – High
DENHCR	Set Detail Enhancer value of Faroudja	500	000 – 015, UP / DN
NZRED	Set/Cancel Noise reduction	500	OFF – Cancel Noise Reduction L1 – Set Noise Reduction L1 L2 – Set Noise Reduction L2 UP / DN
PROGV	Set/Cancel Progressive scan	500	ON, OFF, UP / DN
FILM	Set 2:3 Pull down	500	ON, OFF, UP / DN
IMAGE	Set Image mode	500	STANDPC – Standard (PC) STANDAV – Standard (AV) REAL – Real CINEMA – Cinema CUSTOM1 - Image1 CUSTOM2 - Image2 CUSTOM3 - Image3   CUSTOM10 – Image10
IMAGEADJ	Reset/Store for Image Adjustment	500	RST - Reset STR1 - Save as Image 1 STR2 - Save as Image 2   STR10 - Save as Image10
APCTRL	Set Auto Picture Control	500	OFF – Set Auto Picture Control to Off L1 – Set Auto Picture Control to L1 L2 – Set Auto Picture Control to L2
COLMNSAV	Store the current Color Management setting	500	000 – 019
COLMNLD	Load Color Management setting	500	000 – 019

**Table 3b: PC Control Adjust Command Table**

Command Code	Function	Timing Msec	Parameters
FSYNC	Set Fine Sync value	500	0000 – 0031, UP, DN
TDOTS	Set Total Dots value	500	mmmm – nnnn set total Dots value • mmmm show minimum value • nnnn shows maximum value UP, DN

CLPPHASE	Set Phase for Clamp	500	0000 – 0512, UP, DN
CLPWIDTH	Set Width for Clamp	500	0000 – 0255, UP, DN
H-POS	Set Horizontal Position value	500	0000 – nnnn set horizontal position value • nnnn shows maximum value UP, DN
V-POS	Set Vertical Position value	500	0000 – nnnn set vertical position value • nnnn shows maximum value UP, DN
DLINE	Set Display Line value	500	0100 – nnnn set display line value • nnnn shows maximum value UP, DN
DDOTS	Set Display Dots value	500	0100 – nnnn set Display Dots value • nnnn shows maximum value UP, DN
VSPHASE	Set Phase for V-Sync	500	0000 – 0015, UP, DN
SETPCADJ	Execute the setting value in PC Adjust menu to show up on the screen	500	No parameter required Adjusts: FSYNC, TDOTS, CLPPHASE, CLPWIDTH, H-POS, V-POS, DLINE & DDOTS
ORGMODE	Select original signal that is specified by PC mode	500	XGA1, 1080I60 ....etc
PCSTORE	Store the setting value in PC Adjust menu (each parameter's status such as Total dots) to Mode#	500	1 – MODE 1 2 – MODE 2   50 – MODE 50
PCMODEFREE	Delete the registered value in Mode # and return it to Free status.	500	1 – MODE 1 2 – MODE 2   50 – MODE 50

**Table 3c: Input Control Command Table**

Command Code	Function	Timing Msec	Parameters
INPUT	Select Input	5000	1 – 5, UP / DN
SOURCE	Select Input Source	5000	DIGITAL, ANALOG, VIDEO, YPBPR, YCBCR, YC, S-VIDEO, SCART, HDCP, SDI1, SDI2, NETWORK, UP / DN
INPUT1	Select Input1 and also set input source to	5000	DIGITAL, ANALOG, VIDEO, YPBPR, YCBCR, YC, S-VIDEO, SCART, HDCP, SDI1, SDI2, NETWORK,
INPUT2	Select Input2 and also set input source to	5000	DIGITAL, ANALOG, VIDEO, YPBPR, YCBCR, YC, S-VIDEO, SCART, HDCP, SDI1, SDI2, NETWORK,
INPUT3	Select Input3 and also set input source to	5000	DIGITAL, ANALOG, VIDEO, YPBPR, YCBCR, YC, S-VIDEO, SCART, HDCP, SDI1, SDI2, NETWORK,
INPUT4	Select Input4 and also set input source to	5000	DIGITAL, ANALOG, VIDEO, YPBPR, YCBCR, YC, S-VIDEO, SCART, HDCP, SDI1, SDI2, NETWORK,
INPUT5	Select Input5 and also set input source to	5000	DIGITAL, ANALOG, VIDEO, YPBPR, YCBCR, YC, S-VIDEO, SCART, HDCP, SDI1, SDI2, NETWORK,
SYSTEM	Select System	5000	AUTO, NTSC, NTSC443, PAL, SECAM, PAL-M, PAL-N, 1080I60, 1080I50, 1035I, 720P, 575P, 480P, 575I, 480I, 1080P30, 1080PSF30, MODE1~MODE50, VGA1 etc (compatible computer specification chart on page 72 & 73)

**Table 3d: Screen Command Table**

Command Code	Function	Timing Msec	Parameters
SCREEN	Select Screen size	500	NORMAL, WIDE, TRUE, FULL, CUSTOM, UP / DN
VSCALE	Set V Scale	500	UP / DN 000 – 032 for positive value -01 – -32 for negative value
VPOS	Set V Position	500	UP / DN 000 – 015 for positive value -01 – -15 for negative value
HSCALE	Set H Scale	500	UP / DN 000 – 032 for positive value -01 – -32 for negative value
HPOS	Set H Position	500	UP / DN 000 – 015 for positive value -01 – -15 for negative value
DZOOM	Set Digital Zoom	500	UP / DN
DZCENT	Cancel Digital Zoom mode	500	CENT
KEystone	Set Keystone	500	UP, FUP, DN, FDN, LEFT, FLFT, RIGHT, FRGT & RST
KYSTNMODE	Set Keystone Store mode	500	STR – Store Keystone RST – Reset Keystone

**Table 3e: Lamp Command Table**

Command Code	Function	Timing Msec	Parameters
LAMPH	Reset total running time for each lamp	500	RSTn - Reset each total lamp running time individually (n=1-2, 1=lamp No.1, 2=lamp No.2)
LAMPMODE	Select Lamp mode (Full/Half)	500	FULL, HALF 1xxx – Set lamp 1 Fixed Mode Status x2xxx – Set lamp 2 Fixed Mode Status
AUTOLAMP CONTROL	Switch ON/OFF of Lamp Control	500	NORMAL, ECO, AUTO

**Table 3f: Sound Command Table**

Command Code	Function	Timing Msec	Parameters
VOLUME	Set Volume value	500	000 – 063, UP / DN
MUTE	Control ON/OFF of Sound Mute	500	ON, OFF
BASS	Set Bass value	500	UP / DN 000 – 015 for positive value -01 – -15 for negative value
TREBLE	Set Treble value	500	UP / DN 000 – 015 for positive value -01 – -15 for negative value



**Table 3g: Setting Command Table**

Command Code	Function	Timing Msec	Parameters
BACKGND	Set screen when there is no signal	500	BLUE, MYLOGO, BLACK, UP / DN
DISP	Set Display function	500	ON, OFF, UP / DN
LOGO	Set Logo function	500	DFLT, MYLOGO, OFF, UP / DN
CEIL	Set Ceiling function	500	ON, OFF
REAR	Set Rear Function	500	ON, OFF
RFCH	Select Remote Control Reception Channel	500	001 – 004
RFID	Select Remote Control Reception ID	500	001 – 008
LANG	Select language for OSD	500	ENG – English DEU – German FRA – French ESP – Spanish ITA – Italian POR – Portuguese NED – Dutch SVE – Swedish JPN – Japanese KOR – Korean CHI – Chinese RUS – Russian
ON-STA	Set Power ON Start function	500	ON, OFF
P-MANE	Set Power Management function	500	OFF, READY, SHUTDOWN, UP / DN
P-MANETIME	Set Power Management time	500	01 – 60 set time from 1 to 60 minutes UP / DN
FANSPEED	Select Fan Speed	500	MAX – Maximum NOR – Normal
KEYDIS	Inhibit RC/KEY	500	NONE, RC, KEY
SHUTLVL	Control Open/Close of Shutter	500	ON – Release Shutter NORMAL – Shutter 100% open HCONT – Shutter 80% open UP / DN
SHUTRCROT	Set Shutter operation by Remote Control	500	ON, OFF
SHUTKEYPROT	Set Shutter operation by Control Key	500	ON, OFF
SHUTH	Set Shutter management time	500	005 – 180 set time from 1 to 60 minutes UP / DN
SHUTMGR	Set Shutter management function	500	
FDEFAULT	Set to Factory Default setting value	500	RST
MONIOUT	Set Monitor Out function	500	ON, OFF

**Table 3h: Special Command Table**

Command Code	Function	Timing Msec	Parameters
FILH	Reset the running time of standard filter	500	
SMKH	Reset the running time of Option Box filter	500	

**Table 3i: Other Command Table**

Command Code	Function	Timing Msec	Parameters
KEYEMU	The same operation as RC/Control Key	500	RIGHT, LEFT, UP, DN, SELECT, AUTOPC
MENU	Set ON/OFF of Menu	500	ON, OFF
POWER	Set ON/OFF of Power	500	ON, OFF
FREEZE	Set Freeze function	500	ON, OFF, UP / DN

### **Status Request Commands**

Status request commands are used to poll the projector for the setting or mode of various projector characteristics.

Status request commands follow the protocol:

**CRx(CR)**

Where **X** is the status item code (See Table 4 for a complete list of status item codes and descriptions) and (CR) is 0D.

**Table 4: Function Codes**

Command Code	Function	Notes
0	Status Read	See Table 4.0
1	Input Mode Read	See Table 4.1
3	Lamp Time Read	See Table 4.3
4	Setting Read	See Table 4.4
6	Temp Read	See Table 4.6
7	Lamp Mode Read	See Table 4.7
9	PC Type Read	See Table 4.9
A	Status 2 Read	See Table 4.A

Table 4.0

Status Item Code (x)	Contents	Response
0	Status Read	ss(CR)

ss:	Meaning
00	POWER ON.
80	STANDBY
40	Projector just powered up and is currently in 30 sec. countdown
20	Projector just shut off and is in cooling down.
10	Power failure.
28	Temperature warning and cooling down.
88	Temperature warning occurred and system sits in Standby mode after cooling down.
02	Invalid RS232C command
24	Processing Power Management and cooling down
04	Lamps are off due to unit being in Power Management Mode
21	Cooling down due to lamp failure
81	In Standby after cooling down for lamp failure
2C	Cooling down due to Shutter Management
8C	In Standby after cooling down due to Shutter Management

Table 4.1

Status Item Code (x)	Contents	Response
1	Input Mode Read	s(CR)

s:	Meaning
1	Input 1 is currently selected and being displayed.
2	Input 2 is currently selected and being displayed.
3	Input 3 is currently selected and being displayed.
4	Input 4 is currently selected and being displayed.
5	Input 5 is currently selected and being displayed.

Table 4.3

Status Item Code (x)	Contents	Response
3	Lamp Timer Read	ssss (CR)

ssss:	Meaning
#####	Each 5-digit number represents the total # of hours that a lamp has been ON. First section of numbers represents lamp 1 and the second section of numbers represents lamp 2.

Table 4.4

Status Item Code (x)	Contents	Response
4	Setting Read	s(CR)

SS:	Meaning
11	Configured for Front Screen•Floor Mount
10	Configured for Rear Screen•Ceiling Mount.
01	Configured for Rear Screen•Floor Mount
00	Configured for Front Screen•Ceiling Mount

Table 4.6

Status Item Code (x)	Contents	Response
6	Temperature Read	_ss.s_ss.s_(CR) <i>Note: _: space</i>

SS.S:	Meaning
Numbers	Units are Celsius. This item is used for service purposes. There are 4 Temperature sensor readings. Ex. _31.5_35.2_ means a temperature of 31.5°C and 35.2°C -05.5_-01.2_ means a temperature of -5.5°C and -1.2°C
E00.0	Error reading temperature

Table 4.7

Status Item Code (x)	Contents	Response
7	Lamp Mode Read	ssCR)

SS:	First Digit indicates Lamp Mode
0#	2 Lamp Mode
1#	1 Lamp Mode (Lamp # 1 ON)
2#	1 Lamp Mode (Lamp # 2 ON)
	Second Digit indicates whether Lamp is ON or OFF
#0	All Lamps are off
#1	No. 1 lamp is on, No. 2 lamp is Off
#2	No. 2 lamp is on, No. 1 lamp is Off
#3	All Lamps are on

**NOTE:** If you receive a response that is not found in these tables then the projector is in transition of lamp modes. Resend the command in one (1) minute.

Table 4.9

Status Item Code (x)	Contents	Response
9	PC Type Read	See below chart

Response	Meaning
Stand by	Projector is OFF.
AV Mode	Current source is video.
Go PC adj.	PC System is set to AUTO
No signal	No source on current input.
<b>sssss</b>	Where <b>sssss</b> is the name of an RGB source that's in the PC System window look up table.

Table 4.A

Status Item Code (x)	Contents	Response
A	Status 2 Read	ssss ssss(CR)

s:	Meaning
00	Video Mute "OFF" Audio Mute "OFF"
01	Video Mute "ON" Audio Mute "OFF"
02	Video Mute "OFF" Audio Mute "ON"
03	Video Mute "ON" Audio Mute "ON"
80	No Signal: Video Mute "OFF" Audio Mute "OFF"
81	No Signal: Video Mute "ON" Audio Mute "OFF"
82	No Signal: Video Mute "OFF" Audio Mute "ON"
83	No Signal: Video Mute "ON" Audio Mute "ON"
FF	Unit is in Standby mode or processing Cool Down.

### **Extended Status Request Commands**

Extended Status request commands are used to poll the projector for the setting or mode of various projector characteristics.

Status request commands follow the protocol:

CR_XX(CR)
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Where    is a space and **XX** is the status item code (See Table 4a for a complete list of status item codes and descriptions) and (CR) is 0D.

**Table 4a: Image Status Read Command Table**

Command Code	Function	Timing Msec	Parameters
BRIGHT	Get Brightness value	500	nnn
CONT	Get Contrast value	500	nnn
COLOR	Get Color value	500	nnn
TINT	Get Tint value	500	nnn
SHARP	Get Sharpness value	500	nnn
GAMMA	Get Gamma value	500	nnn
WBAL-R	White Balance Red value	500	nnn
WBAL-G	White Balance Green value	500	nnn
WBAL-B	White Balance Blue value	500	nnn
COLTEMP	Get Color temperature setting value	500	000 – Xlow 001 – Low 002 – Mid 003 – High BLANK – OSD Menu is blank
DENHCR	Get Detail Enhancer setting value of Faroudja	500	nnn
NZRED	Get Noise reduction setting status	500	OFF – Auto Picture Control to Off L1 – Auto Picture Control to L1 L2 – Auto Picture Control to L2
PROGV	Get Progressive scan setting status	500	ON, OFF
FILM	Get 2:3 Pulldown setting status	500	ON, OFF
IMAGE	Get Selected Image status	500	STANDPC – Standard (PC) STANDAV – Standard (AV) REAL – Real CINEMA – Cinema CUSTOM1 - Image1 CUSTOM2 - Image2 CUSTOM3 - Image3   CUSTOM10 – Image10
IMGGMD	Get Image Gamma setting value	500	STANDPC – Standard (PC) STANDAV – Standard (AV) REAL – Real CINEMA – Cinema
APCTRL	Get Auto Picture Control setting status	500	OFF – Auto Picture Control to Off L1 – Auto Picture Control to L1 L2 – Auto Picture Control to L2

**Table 4b: PC Adjust Read Command Table**

Command Code	Function	Timing Msec	Parameters
FSYNC	Get Fine Sync setting value	500	nnn

TDOTS	Get Total Dots setting value	500	mmmm - nnnn
CLPPHASE	Get Phase setting value for Clamp	500	nnnn
CLPWIDTH	Get Width setting value for Clamp	500	nnnn
H-POS	Get Horizontal Position setting value	500	nnnn
V-POS	Get Vertical Position setting value	500	nnnn
DLINE	Get Display Line setting value	500	nnnn
DDOTS	Get Display Dots setting value	500	nnnn
VSPHASE	Get Phase setting value for V-Sync	500	nnnn
SETPCADJ	Get current PC signal for PC display status	500	AUTO, NTSC, NTSC443, PAL, SECAM, PAL-M, PAL-N, 1080I60, 1080I50, 1035I, 720P, 575P, 480P, 575I, 480I, 1080P30, 1080PSF30, MODE1~MODE50, VGA1 etc (compatible computer specification chart on page 72 & 73)
ORGMODE	Get the original signal for PC mode	500	XGA1, 1080I60 ....etc
PCSTORE	Get Free or Stored status for PC Adj. mode 1-50	500	0000000000000 – all free 00000000000001 – Mode 1 stored others free 20000000000000 – Mode 50 stored others free 3FFFFFFFFFFFFF – all stored

**Table 4c: Video Status Read Command Table**

Command Code	Function	Timing Msec	Parameters
SERSYS	Get selected current signal. When in Auto mode, it returns a result by Auto detect.	500	1080I60, 1080I50 1035I, 720P, 575P, 480P, 575I, 480I, NO SIGNAL

**Table 4d: Input Status Read Command Table**

Command Code	Function	Timing Msec	Parameters
INPUT	Get selected Input status	500	1 - 5
SOURCE	Get selected Input Source	500	DIGITAL, ANALOG, VIDEO, YPBPR, YCBCR, YC, S-VIDEO, SCART, HDCP, SDI1, SDI2, NETWORK, BLANK
SRCINP1	Get selected source for Input 1	500	DIGITAL, ANALOG, VIDEO, YPBPR, YCBCR, YC, S-VIDEO, SCART, HDCP, SDI1, SDI2, NETWORK, BLANK, NOCARD
SRCINP2	Get selected source for Input 2	500	DIGITAL, ANALOG, VIDEO, YPBPR, YCBCR, YC, S-VIDEO, SCART, HDCP, SDI1, SDI2, NETWORK, BLANK
SRCINP3	Get selected source for Input 3	500	DIGITAL, ANALOG, VIDEO, YPBPR, YCBCR, YC, S-VIDEO, SCART, HDCP, SDI1, SDI2, NETWORK, BLANK
SRCINP4	Get selected source for Input 4	500	DIGITAL, ANALOG, VIDEO, YPBPR, YCBCR, YC, S-VIDEO, SCART, HDCP, SDI1, SDI2, NETWORK, BLANK

SRCINP5	Get selected source for Input 5	500	DIGITAL, ANALOG, VIDEO, YPBPR, YCBCR, YC, S-VIDEO, SCART, HDCP, SDI1, SDI2, NETWORK, BLANK
SYSTEM	Get selected System in Input Mode	500	AUTO, NTSC, NTSC443, PAL, SECAM, PAL-M, PAL-N, 1080I60, 1080I50, 1035I, 720P, 575P, 480P, 575I, 480I, 1080P30, 1080PSF30, MODE1~MODE50, VGA1 etc (compatible computer specification chart on page 72 & 73)
SYSLIST	Get valid item in System List	500	AUTO, NTSC, NTSC443, PAL, SECAM, PAL-M, PAL-N, 1080I60, 1080I50, 1035I, 720P, 575P, 480P, 575I, 480I, 1080P30, 1080PSF30, MODE1~MODE50, VGA1 etc (compatible computer specification chart on page 72 & 73)
HMSLOT	Get total slot number	500	nnn
MODELIST	Get valid Mode List	500	MODE1 – MODE50
NMSLOT1	Get a card name inserted to Slot 1	500	VIDEO – Input3 video card PROGRESSIVE – Faroudja Card NETWORK – Network card 5BNC – Input2/Component Card DVI – DVI Card HDCP-DVI – HDCP-DVI card DUAL-SDI – Dual SDI card WARP – Warp Card RGB – Input1 NOTERMINAL – there is no card inserted
NMSLOT2	Get a card name inserted to Slot 2	500	
NMSLOT3	Get a card name inserted to Slot 3	500	
NMSLOT4	Get a card name inserted to Slot 4	500	
NMSLOT5	Get a card name inserted to Slot 5	500	
IDSLOT1	Get ID for Slot 1	500	00 = Video 02 = Faroudia 03 = Network 04 = Component 05 = DVI 08 = HD-SDI 10 = Warp Card 11 = HDCP-DVI 30 = on board DVI-D + D-sub 40 = on board 5 BNC 50 = on board 3 BNC + S Terminal  99 = No Card
IDSLOT2	Get ID for Slot 2	500	
IDSLOT3	Get ID for Slot 3	500	
IDSLOT4	Get ID for Slot 4	500	
IDSLOT5	Get ID for Slot 5	500	

**Table 4e: Screen Command Table**

Command Code	Function	Timing Msec	Parameters
SCREEN	Get selected screen size	500	NORMAL, WIDE, TRUE, FULL, CUSTOM
VSCALE	Get V Scale setting status	500	nnn
VPOS	Get V Position setting status	500	nnn
HSCALE	Get H Scale setting status	500	nnn
HPOS	Get H Position setting status	500	nnn
KYSTNMODE	———	500	STR, RST



**Table 4f: Lamp Status Read Command Table**

Command Code	Function	Timing Msec	Parameters
LAMPREPL	Get the information for Lamp replacement time	500	<p>"n****"</p> <p>n ----- shows 2 lamps are used</p> <p>* ----- "Y" means over lamp replacement time, and</p> <p>"N" means inside lamp replacement time.</p> <p>Show the status for each lamp orderly.</p> <p>EX:</p> <p>"2 Y N" ----- 2-lamp system, need a new lamp for No.1 and do not need for No.2.</p>
LAMPH	Get the information for Lamp running time	500	<p>There is Lamp No.1 data, one space, and Lamp No.2 data...</p> <p>Lamp running time is represented as a 5-digit number.</p> <p>%1 = Lamp No.1</p> <p>%2 = Lamp No.2</p> <p>*For 2-Lamp model, there are %1 and %2.</p> <p>Example:</p> <p>For 2-Lamp model</p> <p>"00410_00410" [CR]</p> <p>Lamp No.1 = 410 Hours</p> <p>Lamp No.2 = 410 Hours</p>
LAMPMODE	Get Lamp Mode status	500	<p>For 2-Lamp model:</p> <p>"FULL" ----- Select Full Lamp mode</p> <p>"HALF" ----- Select 3L Lamp mode (Auto)</p> <p>"1xx" ----- Select Lamp 1 fixed mode</p> <p>"x2xx" ----- Select Lamp 2 fixed mode</p>
AUTOLAMPCTRL	Get Auto Lamp Control setting status	500	NORMAL, ECO, AUTO
LAMPSTS	Get Lamp status	500	<p>"n****"</p> <p>The first character shows 1-Lamp/2-Lamp/4-Lamp system.</p> <p>Subsequent characters show the lamp status orderly as below:</p> <p>"I" ----- Lamp is ON</p> <p>"O" ----- Lamp is OFF</p> <p>"X" ----- Lamp Failure</p> <p>Example:</p> <p>"1I" ----- 1-lamp system, Lamp is ON</p> <p>"2IO" ----- 2-lamp system, Lamp No.1 is ON and</p> <p>Lamp No.2 is OFF</p>
INFLAMP	Get Lamp switching status	500	NML ( lamp can be changed) CNG (lamp is cooling down, can't be changed)
PROJH	Get projector total running time	500	nnnnnnn
HMLAMP	Get total number of lamps	500	nnn

**Table 4g: Sound Status Read Command Table**

Command Code	Function	Timing Msec	Parameters
VOLUME	Get Volume value	500	nnn
MUTE	Get Sound Mute setting status	500	ON, OFF
BASS	Get Bass value	500	nnn
TREBLE	Get Treble value	500	nnn

**Table 4h: Setting Status Read Command Table**

Command Code	Function	Timing Msec	Parameters
BACKGND	Get Screen setting status when there is no signal	500	"BLUE" ----- Set Blue Back "MY LOGO" ----- Set My Logo "BLACK" ----- Set Black Back
DISP	Get Display setting status	500	ON, OFF
LOGO	Get Log setting status	500	"DFLT" ----- Set Default Logo "MY LOGO" ----- Set My Logo "OFF" ----- Cancel Logo
CEIL	Get Ceiling setting status	500	ON, OFF
REAR	Get Rear setting status	500	ON, OFF
RFCH	Get selected RF Remote Control Reception Channel	500	"001" ----- Channel 1 "002" ----- Channel 2 "003" ----- Channel 3 "004" ----- Channel 4
RFID	Get selected RF Remote Control ID	500	"001" ----- ID 1 "002" ----- ID 2 ..... "007" ----- ID 7 "008" ----- ID 8
RTYPE	Get IR or RF Remote Control status	500	"RF" ----- RF "IR" ----- IR (N/A for this model, only for RF )
LANG	Get selected language	500	ENG – English DEU – German FRA – French ESP – Spanish ITA – Italian POR – Portuguese NED – Dutch SVE – Swedish JPN – Japanese KOR – Korean CHI – Chinese RUS – Russian
ON-STA	Get ON Start setting status	500	ON, OFF
P-MANE	Get Power management setting status	500	"OFF" -----Power Management is canceled "READY" -----Power Management is Ready "SHUTDOWN" --Power Management is Shut Down
P-MANETIME	Get setting time for Power Management	500	nn

FANSPEED	Get selected Fan Control Speed	500	MAX – Maximum NOR – Normal
KEYDIS	Get RC/KEY prohibited status	500	“NONE” ----- RC & KEY are valid “RC” ----- RC is invalid “KEY” ----- KEY is invalid
SHUTLVL	Get operating status for Shutter	500	“ON” ----- Shutter is released “NORMAL” ----- Shutter is 100% opened “HCONT” ----- Shutter is 80% opened
SHUTRCPROT	Get selected status for Shutter operation by RC	500	“ON” ----- RC operation of Shutter is prohibited “OFF” ----- RC operation of Shutter is permitted
SHUTKEYPROT	Get selected status for Shutter operation by Control Key	500	“ON” ----- Key operation of Shutter is prohibited “OFF” ----- Key operation of Shutter is permitted
SHUTH	Get time setting for Shutter management	500	nnn
SHUTMGR	Get function setting for Shutter management	500	
SECURITY	Get Security setting	500	ON, OFF
MONIOUT	Get Monitor Out setting status	500	ON, OFF

**Table 4i: Special Status Read Command Table**

Command Code	Function	Timing Msec	Parameters
FILH	Get the running time of standard filter	500	There is Filter 1 data, one space, and Filter 2 data. %1 = Filter No.1 %2 = Filter No.2 (N/A for 1-Filter model)  %1, %2 ..... “00000” – “99999” (Deals with 0-99999 hours) Ex: “00005” ----- 1-Filter model, Filter running time is 5 hours “00005_00015” ----- 2-Filter model, Filter 1 running time is 5 hours and Filter 2 is 15 hours
FILCOND	Get the clogged status of standard filter	500	There is Filter 1 data, one space, and Filter 2 data. %1 = Filter No.1 %2 = Filter No.2 (N/A for 1-Filter model)  “CLOG” ----- Filter is clogged “WARN” ----- Filter is nearly clogged (Warning status) “CLEAN” ----- Filter is not clogged  Ex: “CLOG” ----- 1-Filter model, Filter is clogged “CLOG_CLEAN” ----- 2-Filter model, Filter 1 is clogged and Filter 2 is not clogged
FILREPL	Get the information of replacement time for standard filter	500	“n****” n ----- indicates the number of filters * ----- indicates status orderly. “Y” means filter running time reached replacement time, “N” means running time is not over.  Example: “1Y” --- 1-Filter model, Filter time reached replacement time “2YN” ---- 2-Filter model, Filter 1 time reached replacement time and Filter 2 running time is not over

SMKH	Get the running time of Option Box filter	500	<p>There is Filter 1 data, one space, and Filter 2 data.  %1 = Filter No.1  %2 = Filter No.2 (N/A for 1-Filter model)</p> <p>%1, %2 ..... "00000" – "99999"  (Deals with 0-99999 hours)  Ex: "00005" ----- 1-Filter model, Filter running time is 5 hours  "00005_00015" ----- 2-Filter model, Filter 1 running time is 5 hours and Filter 2 is 15 hours</p>
SMKCOND	Get clogged status of Option Box filter	500	<p>There is Filter 1 data, one space, and Filter 2 data.  %1 = Filter No.1  %2 = Filter No.2 (N/A for 1-Filter model)</p> <p>"CLOG" ----- Filter is clogged  "WARN" ----- Filter is nearly clogged (Warning status)  "CLEAN" ----- Filter is not clogged  "FAIL" ----- Failed (Fan stopped, etc. Prior to above status)</p> <p>Ex: "CLOG" ----- 1-Filter model, Filter is clogged  "CLOG_CLEAN" ----- 2-Filter model, Filter 1 is clogged and Filter 2 is not clogged</p>
SMKREPL	Get the information of replacement time for Option Box filter	500	<p>"n####"  n ----- indicates the number of filters  # ----- indicates status orderly. "Y" means filter running time reached replacement time, "N" means running time is not over.</p> <p>Example:  "1Y" --- 1-Filter model, Filter time reached replacement time  "2YN" ---- 2-Filter model, Filter 1 time reached replacement time and Filter 2 running time is not over</p>

**Table 4j: Other Status Read Command Table**

Command Code	Function	Timing Msec	Parameters
STATUS	Get the operating status of projector	500	<p>"00" = Power ON  "80" = Standby  "40" = Processing Countdown  "20" = Processing Cooling Down  "10" = Power Failure  "28" = Processing Cooling Down due to abnormal temperature  "88" = Standby after Cooling Down due to abnormal temperature  "02" = Invalid RS-232C Command  "24" = Processing Power Save/Cooling Down  "04" = Power Save  "21" = Processing Cooling Down after Off due to lamp failure  "81" = Standby after Cooling Down due to lamp failure  "2C" = Processing Cooling Down after Off due to Shutter management  "8C" = Standby after Cooling Down due to Shutter management</p>
PRESSURE	Get Air Pressure data	500	nnnn
SIGNAL	Get Signal status if there is a signal or not	500	ON – There is a signal

			OFF – There is no signal
VMUTE	Get Video Mute setting status	500	ON, OFF
FREEZE	Get Freeze setting status	500	ON, OFF
ALLPFAIL	Get all the information of Power Failure	500	
HMPFAIL	Get total number of detectable Power Failure	500	nnn
PFAIL01 PFAIL02 ⋮ PFAIL50	Get Item name of Power Failure No.01 and error status Get Item name of Power Failure No.02 and error status ⋮ Get Item name of Power Failure No.50 and error status	500	%1 ----- Item name of Power Failure (16-byte fixed length) %2 ----- Power status (2-byte fixed length) Power is failed: "NG" Power status is normal: "OK"
TEMPFAIL	Get temperature when sensors approach abnormal temperature	500	<p>%1 ----- Sensor 1 temp. (External temp.)            %2 ----- Sensor 2 temp. (Internal temp.1)            %3 ----- Sensor 3 temp. (Internal temp.2)            %4 ----- Sensor 4 temp. (Internal temp.3)</p> <p>%1, %2 are fixed six characters            There is one space between %1 and %2            There is one space between %2 and %3            There is one space between %3 and %4</p> <p>(Ex.) "□31.5F" [CR]            □ indicates a space. When the temperature sinks to -, the first character is "-" like "-05.5F" [CR].</p> <p>With some temperature sensors installed, the projector returns the response continuously.            (Ex.1) "□31.5F□□35.2S□□38.0W□□XX.XS" [CR]            The first data indicates sensor 1 data, then one space, and sensor 2 data.</p> <p>Last character indicates the sensor's status.            "F" ----- Exceeding critical temp.            "W" ----- Approaching critical temp. (Warning temp.)            "S" ----- Sensor temp. is safe (Safe temp.)            "N" ----- Sensor detects no critical temp.            "E" ----- Unable to return the temp. data</p> <p>The example 1 shows that sensor 1 indicates 31.5 degrees and the temperature is abnormal, sensor 2 indicates 35.2 degrees and the temperature is safe, sensor 3 indicates 38.0 degrees and the temperature is approaching critical state, sensor 4 indicates the temperature is safe.</p> <p>With the sensor which can only detect two states of Normal/Abnormal, temperature is represented as "□XX.XF" or "□XX.XS". When temperature is safe, all data is represented as "□00.0S".</p> <p>When the projector is reset, "□00.0S" is set, and every time abnormal temperature occurs, it renews the data and returns it.</p> <p>In short, it only returns the renewed data of the latest abnormal temperature and the previous data is deleted.</p>
TEMP	Get current temperature	500	<p>%1 ----- Sensor 1 temp. (External temp.)            %2 ----- Sensor 2 temp. (Internal temp.1)            %3 ----- Sensor 3 temp. (Internal temp.2)            %4 ----- Sensor 4 temp. (Internal temp.3)</p>

		<p>%1, %2 are fixed six characters          There is one space between %1 and %2          There is one space between %2 and %3          There is one space between %3 and %4</p> <p>(Ex.) "□31.5 F" [CR]          □ indicates a space. When the temperature sinks to -, the first character is "-" like "-05.5F" [CR].</p> <p>Last character indicates the sensor's status.          "F" ----- Exceeding critical temp.          "W" ----- Approaching critical temp. (Warning temp.)          "S" ----- Sensor temp. is safe (Safe temp.)          "N" ----- Sensor detects no critical temp.          "E" ----- Unable to return the temp. data</p> <p>With some temperature sensors installed, the projector returns the response continuously.          (Ex.1) "□31.5F□□35.2S□□38.0W□□XX.XS" [CR]          The first data indicates sensor 1 data, then one space, and sensor 2 data.          The example 1 shows that sensor 1 indicates 31.5 degrees and the temperature is abnormal, sensor 2 indicates 35.2 degrees and the temperature is safe, sensor 3 indicates 38.0 degrees and the temperature is approaching critical state, sensor 4 indicates the temperature is safe.          With the sensor which can only detect two statuses of Normal/Abnormal, temperature is represented as "□XX.XF" or "□XX.XS". When temperature is safe, all data is represented as "□00.0S".</p> <p>(Ex.2) "□00.0E□□00.0E□□- - - - N□□XX.XS" [CR]          When it cannot return the temperature data due to hardware error, the last character is "E" like "□00.0E".          It might happen for some projectors that temperature continues to go up to abnormal status as long as lamp ballasts are hot. Therefore when in Standby mode or for several tens of seconds after Power is ON, any treatment of Power Failure is not processed. In that case, the temperature data is represented as "□- - - - N".</p>
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## Error Code Table

Function	Notes
?	-When the received data cannot be decoded -Parameter determination error (digit number error, including invalid value, etc.)
000	Normal reception (No error)
101	The function is not available in the selected Mode
102	Selected value is out of range
103	Command mismatched to Hardware (command for Optional function which may not be installed)
201	You have reached upper or lower limit of increasing or decreasing data

## 1.4 Controlling Multiple Projectors

You can control multiple projectors using the RS232C loop-through output. By daisy chaining (connect the PC RS232 to the RS232 IN of one projector and then connect the RS232 OUT of that projector to the RS232 IN of another projector and so on), one PC can control multiple projectors.

### 1. Setting the Projector's Address

Set specific address number for each projector.

① Turn projector on.

② Enter the service mode.

To enter the service mode, press the **MENU** and **SELECT** button on the projector at the same time and hold for 3 seconds

③ Change the service Group to 10 using the left/right arrow key on the projector or remote control. Change the No. to 3 by pressing the up/down arrows on the projector or remote control.

④ Once set to 10-3, adjust the data to set the projector's address number. (Adjust the Data by pressing the VOLUME UP/DOWN button. Setting value must be different for each projector to control each one individually.

⑤ Turn projector off, allow to cool and power back up for the new address to take effect.

### **WARNING:**

**Do not attempt to adjust any other items while in the service menu. Doing so could render the projector inoperable and/or unsafe.**

### 2. Sending Commands

Add "A" + specific address number to the beginning of a usual command, and send it.

#### Example 1 - Controlling One Projector in the Daisy Chain

To change only projector of address number 15 to INPUT2.

Send command: **A015C06[CR]**

where **A** specifies that a unique projector address is being used

**015** is the 3-digit address number in10 base (same as the address number set in the Service Menu.

**C06** is the command code to select INPUT 2

**[CR]** is carriage return or 0D.

**Note:** *Returning data is the same as connecting one projector to one PC.*

**Example 2** - *Broadcasting Commands To All Projectors*

When you want to turn all projectors on together.

Send command: **AFFFC00[CR]**

where     **A** specifies that a unique projector address is being used

**FFF** is the 3-digit address number used to address all projectors in the daisy chain.

**C00** is the command code to POWER ON

**[CR]** is carriage return or 0Dh.

**Note:** *There is no returning data when you send a broadcast command. (There is no response from the projectors)*

## **CAUTION**

When sending commands, be sure to add the address number. If you send a command without adding the address number, it may cause a malfunction. This is because all of the projectors in the daisy chain will return data (like connecting one projector to one PC) and the returned data may be garbled.